

## Thermal Mapping of Tharsis Region

A. Ivanov (Caltech), D. Muhleman (Caltech), A. Vasavada (Caltech)

We observed Mars with the Very Large Array (VLA) on two nights in 1990 and 1995 during opposition. Operating at the wavelength of 1.35 cm (22 GHz), we mapped the thermal emission from the Martian surface. A thermal model of Martian subsurface temperatures was used to fit apparent dielectric constant values to the observed surface brightness temperature variations. We were then able to map emissivity for the Tharsis and Amazonis Planitia regions of Mars. The results reveal a region with anomalously high values of emissivity (low dielectric constant). This region lies within the contour of the Stealth feature, discovered by Muhleman's radar group in 1991. Based on the results of passive and active radar experiments, we interpret Stealth as a region of low density near the surface. The effective depth of passive probing is just several wavelengths (10-15cm), even shallower than the radar result. The lowest estimate of density, derived from the emissivity is  $0.4 \text{ g/cm}^3$ . We think that this region is formed by some underdense material, like ash or pumice and is associated with volcanic activity of the nearby Tharsis volcanoes.

## Division for Planetary Sciences Abstract Form

DPS Category 9

Running #7423

Session 0.00

Invited ☐ Poster presentation ☒ Title only ☐

Have you received your Ph.D. since the last DPS meeting?

Yes ☐ No ☐

Is your abstract newsworthy, and if so, would you be willing to prepare a news release and be available for interviews with reporters?

Yes ☐ No ☒ Maybe ☐

Paper presented by Anton Ivanov

170-25 Caltech  
1205 E. California blvd.

Pasadena CA 91125 USA  
Phone: 818-395-6961  
Fax: 818-585-1917  
Email: anton@mola.gps.caltech.edu

Special instructions: Tue Aug 27 16:00:32 CDT 1996

Membership Status (First Author):

DPS-AAS Member ☐ Non-Member ☐

Student Member ☐ Student Non-Member ☒

Is this your first DPS presentation? Yes ☒ No ☐

Sponsor: Andrew P. Ingersoll

Abstract submitted for 1996 DPS meeting

Date submitted: LPI electronic form version 5/96